**Physical and Chemical Properties of Matter (V2)**

Read Pearson p 148 - 152

1. Complete the following table.

|  |  |  |
| --- | --- | --- |
| Physical Property | Definition | Describe a penny using this physical property |
| Ductility |  |  |
| Density |  |  |
| Conductivity |  |  |
| Luster |  |  |

2. Explain the difference between a chemical property and a chemical change.

3. What must occur for a chemical property to be observed? Give an example.

4.a) Define combustibility.

b) What 3 items are required for combustion to occur? Hint: did you read p 148?

5. Give examples of when you have seen each of the following chemical properties.

a) heat absorbed by a reaction

b) reaction with acid

c) reacts with water

# Activity 1 - Classifying Elements Suitcase

Fill in the chart below by analyzing **at least 8 of the 22 elements** that are in the vials. For each element, you are to

(1) Fill in the colour you see.

(2) Look to see if the element is lustrous or not.

(3) See if each element is magnetic by allowing it to touch the magnet and looking for attraction.

(4) Find the chemical symbol from the periodic table.

(5) The last part of the chart asks you to determine whether the element is a metal or a non-metal using a periodic table.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Element | **Colour** | **Lustre (Yes/No)** | **Magnetic? (Yes/No)** | **Symbol** | **Metal or Non-Metal?** |
| Magnesium |  |  |  |  |  |
| Lead |  |  |  |  |  |
| Iron |  |  |  |  |  |
| Zinc |  |  |  |  |  |
| Silicon |  |  |  |  |  |
| Tin |  |  |  |  |  |
| Copper |  |  |  |  |  |
| Sulfur |  |  |  |  |  |
| Calcium |  |  |  |  |  |

# Classifying Elements continued

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Element | **Colour** | **Lustre (Yes/No)** | **Magnetic? (Yes/No)** | **Symbol** | **Metal or Non-Metal?** |
| Carbon (graphite) |  |  |  |  |  |
| Cobalt |  |  |  |  |  |
| Carbon (charcoal) |  |  |  |  |  |
| Manganese |  |  |  |  |  |
| Antimony |  |  |  |  |  |
| Nickel |  |  |  |  |  |
| Lithium |  |  |  |  |  |
| Cadmium |  |  |  |  |  |
| Germanium |  |  |  |  |  |
| Chromium |  |  |  |  |  |
| Bismuth |  |  |  |  |  |
| Phosphorus |  |  |  |  |  |
| Mercury |  |  |  |  |  |

**ACTIVITY 2 - USING PHYSICAL AND CHEMICAL PROPERTIES TO IDENTIFY MATTER**

Complete this chart for any 8 of the 15 substances around the room. Be sure to put your answers by the correct item number.

Describe the properties of each substance by filling in the chart.

If a property does **not** apply put an X. If you cannot test a property make a **prediction**, e.g. Rock - Insoluble.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Item #** | **STATE**  **liquid, solid or gas?** | **VISCOSITY?**  **(high, med, low)** | **MALLEABLE?**  **yes or no?** | **DUCTILE?**  **yes or no?** | CRYSTALLINE? **yes or no?** | **SOLUBLE IN WATER?**  **yes or no?** | **COMBUSTIBLE?**  **yes or no?** | **SUBSTANCE** |
| 1 |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Item #** | **STATE**  **liquid, solid or gas?** | **VISCOSITY?**  **(high, med, low)** | **MALLEABLE?**  **yes or no?** | **DUCTILE?**  **yes or no?** | CRYSTALLINE? **yes or no?** | **SOLUBLE IN WATER?**  **yes or no?** | **COMBUSTIBLE?**  **yes or no?** | **SUBSTANCE** |
| 9 |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |  |  |
| 13 |  |  |  |  |  |  |  |  |
| 14 |  |  |  |  |  |  |  |  |
| 15 |  |  |  |  |  |  |  |  |